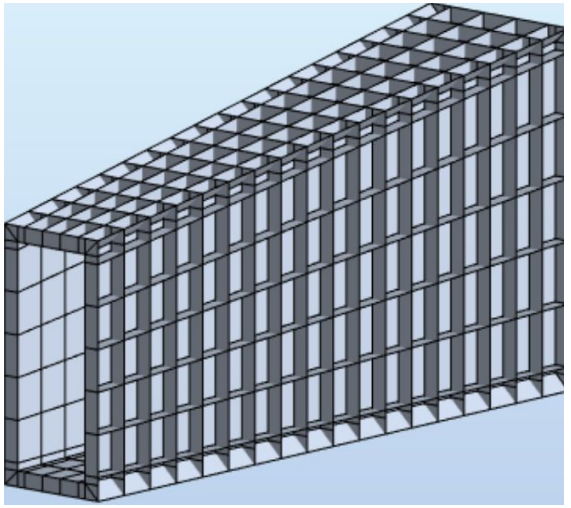
ShiP – SBT

Detector Prototype Tests



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SHiP Vacuum Vessel Workshop
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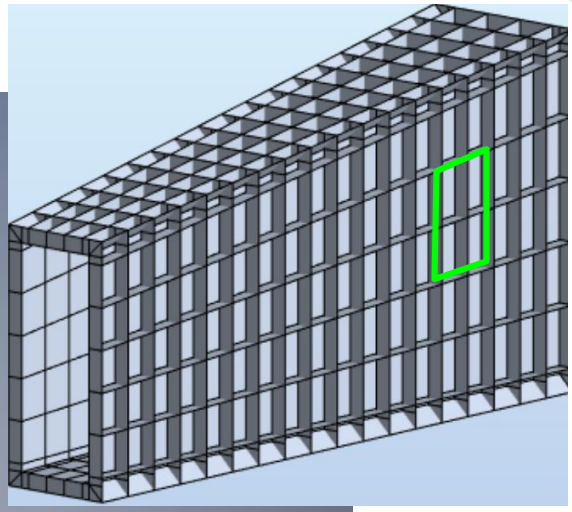
2x2 Cell Prototype



Prototype Facts

– 2x2 cells, 2(?) WOMs per cell
– cell size: ~120 x 80 x 30 cm^3
  → will match the increasing vessel geometry without 90° angles
– cells made of S355 structural steel
– cells connected as planned for SBT

Prototype Test Goals

- Test **reconstruction** of
  position, direction, time, energy deposition, particle type
  from WOM signals
  → full G4 simulation
  → development of reconstruction algorithms
- Testbench for SBT-WOM **readout electronics**
  → „scalable high-throughput DAQ with advanced feature extraction“
  (FPGA-based with AI, FIR … for feature extraction)
- **Test beam** campaign @ CERN (e, μ, π)
  → 4x4 structure movable in x, y, θ, (a bit) φ

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- Test **mechanics** of WOM cell structure @ real scale
  („copy“ the relevant parts of the vacuum vessel)
- Test **material compatibility/stability**: LS, coating, steel, etc.
- Test **cell design**: WOM placement, flanges, cabling, access…
- Test **LS handling**: cell filling, emptying, LS quality, ...
- other ideas?

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Funding proposal for this project submitted to BMBF (DE) in Fall 2020 by Berlin, Mainz, Freiburg, (Aachen, Jülich)

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